

CLAIMS

1. A respirator comprising a respirator facepiece, a first sealing means suitable for forming a seal on the face of a user so as to define a first cavity between the first sealing means, the respirator facepiece and an area of the user's face comprising the eyes, mouth and nose, a second sealing means suitable for forming a seal on the face of the user so as to define a second cavity, the second cavity being formed between the second sealing means, the first sealing means, a portion of the face of the user and optionally the respirator facepiece, a respirator air inlet for conducting inhaling air to the first cavity, a respirator air outlet for conducting exhaled air from the first cavity, and an air pressure supply means suitable for supplying pressurised air to the second cavity whereby in normal operation air is inhaled and exhaled solely through the first cavity and so substantially no air pressure differential exists between the ambient atmosphere and the second cavity which will allow ambient air to enter the second cavity.
2. A respirator according to claim 1 further comprising at least one eyepiece and a means for directing inhaling air over the at least one eyepiece.
3. A respirator according to claim 2 further wherein the means for directing inhaling air over the at least one eyepiece is capable of diverting some of the inhaling air directly to the oronasal region of the user.
4. A respirator according to either of claims 2 and 3 further comprising exhaust deflection means capable of preventing exhaled air from contacting the at least one eyepiece.

5. A respirator according to claim 4 wherein the exhaust deflection means comprises a third sealing means that, in use, engages with the face of the user so as to form ocular and oronasal cavities, the third sealing means being provided with means
5 for permitting gaseous flow from the oronasal cavity to the ocular cavity.

6. A respirator according to any one preceding claim further comprising a valve assembly comprising a valve body having a valve assembly outlet and a valve assembly inlet, and a valve cavity therebetween, a valve mechanism for permitting
10 gaseous flow through the valve assembly inlet into the valve cavity and to the valve assembly outlet, a continuous purge outlet means connectable to an air pressure supply means, an air deflection means spatially arranged in the valve cavity relative to the valve mechanism and the purge outlet means such that, on connection and activation of a suitable air pressure supply means, air is emitted from the purge outlet
15 means and is incident on the air deflection means such that a curtain of air may be substantially maintained above the valve mechanism.

7. A respirator according to any one preceding claim wherein the respirator air inlet is, in use, in gaseous communication with the first cavity, thus forming a first
20 gaseous pathway, a second air inlet is in gaseous communication with the air pressure supply means which is capable, in use, of providing gas to the second cavity, thus forming a second gaseous pathway, wherein the first and second air inlets are located in a common filter connection means, and the filter connection means is connectable to a suitably adapted filter such that in use the first and second gaseous pathways are

mutually isolated so that inhalation by the user does not substantially affect the pressure in the second gaseous pathway.

8. A sealing piece for a respirator, the sealing piece comprising first and second
5 portions, each comprising a substantially compliant material and each having a
respective sealing surface suitable for engagement with the face of the user so as to
define a substantially sealed cavity between the sealing piece and the face of the user,
the first and second portions being mutually connected by a third portion suitable for
attachment to the surface of a respirator, the sealing piece further comprising a gas
10 inlet for allowing, in use, the supply of pressurised gas to the cavity, and wherein the
first and second portions are so shaped that, in use, the application of a positive
pressure in the cavity does not cause the seals to be broken.

9. A sealing piece according to claim 8 wherein, in use, the application of a
15 positive pressure in the cavity causes at least one of the first and second sealing
surfaces to be urged into a more positive engagement with the face of the user.

10. A sealing piece according to either of the claims 8 and 9 wherein the first and
second portions are locally J or U shaped in section.

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11. A sealing piece according to any one of claims 8 to 10 wherein at least one of
the first and second portions comprises a reverse reflex seal.

12. A respirator comprising a sealing piece according to any of Claims 8 to 10.

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13. A respirator substantially as hereinbefore described with reference to Figures 1 to 3 and 6 of the accompanying drawings.